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| 10/002,881 | 11/02/2001 | Jonas Klingspor | 305/1/138N | 4830 |
| 23565 | 7590 | 06/15/2004 | EXAMINER | |
| KLAUBER & JACKSON 411 HACKENSACK AVENUE HACKENSACK, NJ 07601 | | | DUONG, THANH P | |
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1764

DATE MAILED: 06/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/002,881

Applicant(s)

KLINGSPOR ET AL.

Examiner

Tom P Duong

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 November 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 9-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-15 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3/7/02.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-8, drawn to a flue gas desulfurization system, classified in class 422, subclass 168.
- II. Claims 9-15, drawn to a method for desulfurizing flue gas, classified in class 423, subclass 243.08.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case, the process of desulfurizing flue gas can be done by utilizing a dry scrubbing desulfurization of flue gases using soda ash, lime, or similar alkali reagents other than a wet scrubber.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.

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During a telephone conversation with Mr. Stefan Klauber on June 10, 2004 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-8. Affirmation of this election must be made by applicant in replying to this Office action. Claims 9-15 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schneider et al. (4,053,292) in view of Stowe Jr. (5,403,568). Schneider discloses a flue gas desulfurization system (Figure 1) comprising: a scrubber section (3) having an inlet (2) and an outlet (1) for said flue gas with a substantially horizontal flow path for said gas being defined between said inlet and outlet; b) scrubber composition spray means

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(12,13) positioned in said horizontal gas flow path for spraying an aqueous scrubber composition in a direction which is generally co-current (Fig. 1, spray direction for spray 12 and 13) with said gas flow; said system being free of means which spray said scrubber composition in directions generally countercurrent (Fig. 1, spray direction for spray 16, 17) to said gas flow c) a reaction tank (8,9) underlying said scrubber section and in open communication therewith for providing a reservoir for said scrubber composition, for receiving the scrubber composition (Col. 2, lines 26-27) which has contacted said flue gas and gravitationally descended to said tank from said scrubber section, and for receiving the reaction products of said flue gas and scrubber composition (holding tank 8,9); d) means for pumping (10,11) the scrubber composition from said reaction tank to said spraying means. Schneider fails to disclose e) means for removing said reaction products from said reaction tank; and f) means for replenishing the scrubber composition contained in said reaction tank. Stowe teaches a solid removal tank 83 to remove build-up of solids from the system (Col. 5, lines 10-13) and the fresh make-up aqueous scrubbing medium is provided from a source 87. Thus, it would have been obvious in view of Stowe to one having ordinary skill in the art to modify the scrubbing apparatus of Schneider with removal tank 83 as a means for removal reaction products or build-up solids from the system and a tank source 87 to replenish the scrubber composition in the reaction tank.

2. Claims 2-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over the applied references (Schneider '292 in view of Stowe '568) in claim 1 above, and further

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in view of Teller (4,049,399). The applied references fail to disclose means for introducing oxidation air into the reaction tank. Teller teaches air is introduced in to line 126' by a compressor thru a nozzles 125' to facilitate the oxidation process by reducing the SO₂ concentration (Col. 12, lines 57-65 and Col. 1, lines 29-33). Thus, it would have been obvious in view of Teller to one having ordinary skill in the art to modify the scrubbing apparatus of the applied references with means for introducing oxidation air as taught by Teller in order to facilitate the oxidation process, which reduces the SO₂ concentration. Regarding claim 3, Schneider discloses a primary (section between spray 12 and drop trap 5) and a secondary gas zone (section between spray 13 and drop trap 7) in series in the gas flow path, said zones being separated by a mist eliminator (drop trap 5, Col. 2, lines 20-21) and pumping means comprises separate pumps (10,11) for spraying aqueous scrubber composition from the secondary reaction tank (8) into the primary gas zone (section between spray 12 and drop trap 5) and for spraying aqueous scrubber composition (reactant from tank 9) from the primary reaction section (9) into the secondary gas zone (section between spray 13 and drop trap 7). Schneider fails to disclose a reaction tank being separated by a vertical partition; however, it would have been obvious in view of Schneider to one having ordinary skill in the art to provide either two-tanks (primary reaction section and secondary reaction tank) with a common wall partition as claimed or two separate tanks (8,9) as disclosed by Schneider since each of the tank 8 and 9 of Schneider has its own reactant concentration similar to the reactant concentration of secondary and primary reaction sections of the claimed invention. Regarding claim 4, the applied references (Schneider

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in view of Stowe) discloses the reaction products are removed from said secondary reaction section as described in claim 1, above and Schneider further discloses means to bleed (via solenoid valve 114 thru spray 112) aqueous scrubber composition from said primary reaction section (tank 9) to said secondary reaction section (tank 8).

Regarding claim 5, the applied references fail to disclose an oxidation means is present only in said primary reaction section. Teller teaches a stronger oxidizing gas such as chlorine is introduced (feed 210) further downstream (primary reaction section) of the flue gas to further reduce the concentration of SO₂ in the flue gas (Col. 12, lines 60-68). Note, Teller discloses both oxidizing agent such as air (via line 126') in the upstream (secondary reaction section, and oxidizing agent such as chlorine (via line 210) in the downstream (primary reaction section).

3. Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over the applied references (Schneider '292 in view of Stowe '568 and Teller '399) in claim 5, above and further in view of Bondor (4,039,307). Regarding claim 6, the applied references in claim 5 fail to disclose agitation means for inhibiting settling of solids which are present in said secondary reaction section. Bondor teaches agitation means 52 to ensure adequate mixing of the reactants in the reagent tank 48 (Fig. 8). Thus, it would have been obvious in view of Bondor to one having ordinary skill in the art to modify the scrubbing apparatus of the applied references with agitation means as taught by Bondor to provide proper mixing of the reactants in the reaction tank. Regarding claim 7, Schneider shows bleed means (flow thru solenoid valve 114) from primary reaction tank 9 and secondary reaction tank 8 (collector duct 14 into tank 8).

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Regarding claim 8, Schneider shows bleed means (flow thru solenoid valve 114 to spray 112) is connected to wash the mist eliminator (drop trap 5) between said primary and secondary gas zones with said aqueous scrubber composition from said primary reaction section (tank 9).

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tom P Duong whose telephone number is (571) 272-2794. The examiner can normally be reached on 8:00AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tom Duong
June 11, 2004

TD


Glenn Caldarola
Supervisory Patent Examiner
Technology Center 1700